



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
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M60050.003131  
MCAS EL TORO  
SSIC NO. 5090.3

February 12, 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure, Environmental Division  
MCAS El Toro  
7040 Trabuco Road  
Irvine, CA 92618

RE: EPA Comments on Draft Expanded Site Inspection Report, Anomaly Area 3, Former  
Marine Corps Air Station, El Toro, dated November , 2003

Dear Mr. Piszkin,

EPA has reviewed the above-referenced report regarding Anomaly Area 3. Based on the results of this investigation, the Navy recommends No Further Action for Anomaly Area 3(AA 3). EPA is unable to concur with this conclusion due to various factors which are outlined in our enclosed comments. While this report provides a good first step in characterizing contamination at AA 3, we believe that more information as well as further discussion is needed in order to determine the appropriate action for this site.

Enclosed are our comments which detail our concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicole Moutoux", written in a cursive style.

Nicole Moutoux  
Project Manager  
Federal Facilities Cleanup Branch

cc: Karnig Ohannessian, SWDIV  
Manny Alonzo, DTSC  
John Broderick, RWQCB  
Marcia Rudolph, RAB Subcommittee Chair  
Robert Woodings, RAB Co-Chair

**U.S. EPA Comments on the Expanded Site Inspection Report, Anomaly Area 3,  
Former Marine Corps Air Station, El Toro, California,  
November 2003**

**GENERAL COMMENTS**

1. Since identifying Anomaly Area 3(AA3), the Navy has stated that the presumptive remedy of capping is the appropriate remedy for AA3. Prior discussions, sampling plans, correspondence with the public and the team have primarily involved the assumption that AA3 was a landfill that must be capped. As such, much of the sampling design was developed in order to support cover design. As you know, under CERCLA, a determination of No Further Action means that the future owner can do anything they like with the property, including digging out the entire contents of AA3. Because contamination was found in the soil gas, subsurface as well as groundwater, unless the Navy plans to conduct a thorough sampling of the contents of the landfill, achieving No Further Action is not a realistic recommendation for this site.
2. In many instances throughout the report the Navy subtracts background risk from total risk. This practice is not acceptable to EPA. The risk contributed by background is something that may be taken into account when making a risk management decision. However, this decision is not made until later in the CERCLA process. In addition, there is language throughout this report which implies that because the risk is in the "risk range", it is acceptable. This is not appropriate justification and should not be referenced. The point of departure for risk is  $1E-6$ . The risk range refers to a range in which discussions regarding risk at a specific site may be appropriate and is not a justification for not taking action, particularly at this point in the process.
3. Analyses of groundwater samples collected in the two groundwater monitoring wells installed in the uppermost aquifer downgradient of the disposal site (MW1 and MW2) indicate that there is a potential on-going release of hexavalent chromium from the site. The average total chromium concentrations detected in samples collected from the downgradient wells is 112 ug/L (maximum 296 ug/L). The average total chromium concentration detected in groundwater samples collected from all other wells at AA 3 is 4 ug/L (maximum 20.1 ug/L). Please revise the report to discuss how the Navy will characterize the extent of this potential release. In addition, the possible presence of an industrial chemical in groundwater downgradient of the site indicates that the site may have been used for the disposal of industrial wastes.

**SPECIFIC COMMENTS**

1. **Section 2.2, Land Use, Page 2-5:** This section states that records indicate that some of the borrow pits and trenches were backfilled with construction debris and later covered

with 5 feet or more of fill soil. However, on page xi of the Executive Summary and on page 9-11, the text states that 2-5 feet of soil cover was encountered over the construction debris at AA 3. Please explain this discrepancy or revise the document so that the reported depth of fill soil is consistent.

2. **Section 3.4, Geophysical Investigation, Page 3-5:** The existence of a large area of elevated electrical conductivity in the central portion of the survey area is mentioned, but its significance is never discussed. Please explain the significance of this elevated electrical conductivity.
3. **Table 3-3, Details of Subsurface Soil Sampling from Trenches - Previous Investigation, Page 3-7:** Strong odors, including a petroleum odor at 5 to 7 feet bgs at Trench 2E and a sweet chemical odor at 3 to 5 feet below ground surface (bgs) at Trench 4E, were noted during this investigation. These strong odors below the ground surface may indicate the presence of contamination but are not addressed in later investigations or in this report. Please explain why the presence of these strong odors is not addressed by the investigations, or alternatively, why it is not indicative of contamination at AA 3.
4. **Section 4.5.2, Ambient Air Sampling, Page 4-10:** Ambient air sampling was “conducted at the perimeter of the debris to assess the potential impact offgas [sic] emissions on the surrounding air quality, and to assess the background levels of constituents in air and meet the requirements of SCQAMD Rule 1150.1.” Please explain how site emissions were differentiated from background levels.
5. **Section 4.5.3, Integrated Surface Air Sampling, Page 4-13:** Please explain why a multigas meter and photoionization detector were used during sampling in Grids 1-4 but not Grids 5-8.
6. **Section 4.6, Soil Gas Sampling, Page 4-14:** This section states that “approximately 33 boreholes... were drilled.” Please explain why this number is an approximation and why the exact number of boreholes is unknown, or change this sentence to indicate the exact number of boreholes that were drilled.
7. **Section 4.7.2, Soil Cover Thickness Evaluation, Page 4-16:** This section states that “continuous core soil samples were collected at critical locations to evaluate the thickness of fill soil.” Please provide greater detail about these “critical locations,” including how many there were and how they were chosen as the critical locations.
8. **Table 4-3, Lithology of Continuous Core Soil Samples-RSE Investigation, Page 4-17:** In the Lithology column, many of the descriptions specify “No debris.” However, the descriptions that do not specify “No debris” also do not specify if there was debris, and if so, the nature of this debris. Please revise the table to indicate whether debris was found at the locations where the descriptions do not specify “No debris” as well as what type of debris was encountered.
9. **Section 4.10, Surface Water Sampling, Page 4-20:** According to this section, the

surface water samples results were evaluated based on comparison to groundwater quality criteria. Please explain why it is appropriate to compare these results to groundwater quality criteria as opposed to ecological screening levels.

10. **Section 4.11, Analytical Laboratory Data Validation, Page 4-21:** The phrase “method blank issues” is vague. Please explain in greater detail the adjustment of reporting limits for methylene chloride and TPH.
11. **Section 5.3, Refined Hydrogeology of the Site and Figure 5-6, Groundwater Equipotential Map:** Groundwater monitoring well MW10, although installed downgradient of the landfill, does not appear to be screened in the same water-bearing unit as MW1 and MW2. Figure 5-4 indicates that MW1 and MW2 are screened in alluvium whereas MW10 is screened in bedrock. In addition, the groundwater elevation in MW10 is anomalously high compared to the groundwater elevations in MW1 and MW2. The way the equipotentials are drawn in Figure 5-4, MW1, which has been impacted by site constituents, is shown as being upgradient of the landfill which is clearly not correct. Please redraw the groundwater equipotential map without using data from MW10 and any other monitoring well not installed in the uppermost water-bearing stratum at the site.
12. **Table 5-7, Wildlife Species Documented On and Adjacent to AA 3:** Please use bold text or some other method to denote any State or federally-endangered animals listed in Table 5-7.
13. **Section 6.1, Physical Extent of Debris Placement Area, Page 6-2:** According to this section, “Based on the definition of inert waste in the State of California Public Resource Code Section PRC 48007 ‘*inert waste*’ means rock, concrete, brick, sand, soil, and cured asphalt only”, the debris encountered in AA3 site trenches would be classified as inert construction debris.” It seems that since waste encountered includes wire, metallic debris, PVC tubing, asbestos pipes, and other materials not included in this definition of inert waste, not all of the debris encountered should be considered inert construction debris. For example, Title 22 Section 66261.24 indicates that if the pipe is greater than 1 percent asbestos, it is considered to be hazardous waste. Please address this inconsistency.
14. **Section 6.2.2, Integrated Surface Air Sampling Results, Page 6-18:** The concentrations of detected analytes are compared to median and maximum concentrations published by California Air Resources Board for statewide landfill testing. Please also compare the concentrations to residential preliminary remediation goals (PRGs).
15. **Section 6.3.2, Subsurface Soil Gas Sampling Results, Page 6-23:** At a depth of 15 feet bgs, three locations (HA16, HA18, and HA21) exceed the Title 27 CCR stipulated LEL of 50,000 ppmv for methane. This exceedance is noted, but no remedial action to reduce methane levels is suggested and the report concludes that the installation of a landfill gas collection system at AA 3 is not warranted. Please explain how these exceedances will be addressed.

16. **Section 6.3.4, Summary of Nature and Extent of Chemical Contamination - Subsurface Soil Gas, Page 6-28:** This section states that "The detection of several VOCs in the perimeter soil vapor wells was inconsistent with the non-detect VOC results in all of the shallow and subsurface soil gas samples collected from within the debris placement boundary." Please provide an explanation for this inconsistency. Please also address whether the different methods used (soil vapor wells vs. direct push technology) may play a role.
17. **Table 6-8, Summary of Detected Analytes - Subsurface Soil Gas (15 feet bgs) Survey - RSE Investigation, 6-31:** Please include locations HA16 and HA18, with methane concentrations exceeding 5 percent, in this table.
18. **Section 6.4.2, Subsurface Soil Sampling - Previous Investigation, Page 6-69:** This section states that "the metals not listed in Table 6-19 but detected include... lead (3 detections; 24.6 to 677 mg/kg)." Table 6-19 does list lead, and indicates that there were 24 detections (2.22 to 677 mg/kg). Please revise so that the tables and text are consistent.
19. **Section 6.5.5, Summary of Groundwater Sampling Results, Page 6-72:** This section concludes that there is no impact to the groundwater from the site. Given the detections and/or MCL exceedances of several chemicals and metals, the likelihood that some of the waste is in direct contact with the groundwater, as well as the fact that the entire contents of the landfill is not known, the conclusion that "the site did not receive any debris that could cause chemical contamination in the groundwater" is not supported by the results presented in this report.
20. **Section 7.2.2, Sample Reporting Limit Evaluation, Page 7-3:** The process described here is inconsistent with the values presented in Table 7-1. The text notes that the screening criteria for analytes detected in groundwater is the federal maximum contaminant level (MCL). However, with the exception of the screening criteria for petroleum hydrocarbons, all of the screening values for analytes in groundwater represent the tap water PRGs. Please correct the text.

In addition, the text here states that for soils, "essentially all of the chemicals exhibited a predominance of reporting limits at or less than the screening criteria." However, according to the information presented in in Table 7-1, the frequency that the reporting limit exceeded the applicable screening criteria (defined as FOE in the footnotes to Table 7-1) typically exceeds 50 percent and appears to be 100 percent for a substantial number of analytes. Please clarify this discrepancy.

21. **Section 7.2.3.2, Elevated Reported Limits, Page 7-4:** Please provide a summary of data that were not included in the risk assessment because of elevated detection limits.
22. **Section 7.2.3.3, Summary Statistics for Sample Data, Page 7-15:** A uniform assumption that all data are lognormally distributed is not appropriate. A 95 percent upper confidence limit (UCL) on the arithmetic mean based on a lognormal distribution should only be calculated when the data can be shown to approximate a lognormal distribution.

Further, when the data do not appear to fit either a normal or lognormal distribution, the assumption that they represent a single population should be carefully reexamined. Alternate methods for calculating exposure point concentrations for data that are neither normally nor lognormally distributed are presented in EPA, 2002a, and should be used in place of simply assuming a lognormal distribution when calculating the exposure point concentration.

23. **Section 7.4.2, Conceptual Site Model, Page 7-38:** Exposure to contaminants in groundwater should be evaluated as a complete pathway for the residential scenario. While Section 7.4.3.2.4 notes that exposure to groundwater could be a complete pathway if used as a source of domestic water, no further explanation is provided as to why exposure to groundwater was not considered for future residents despite the fact that the report notes on page 7-1 that groundwater is classified as a potential drinking water source.
24. **Figure 7-1, Conceptual Site Model, Page 7-35:** According the matrix, exposure to contaminants in groundwater is considered incomplete via bioaccumulation and consumption of food, while the associated rationale states that exposure to groundwater is potentially complete if it is pumped for agricultural purposes. Further explanation is needed why use of groundwater for irrigation of food crops (either locally or in backyard gardens) should not be evaluated as a complete exposure pathway.
25. **Section 7.4.4, Estimation of Exposure Point Concentrations, Page 7-38:** It is not clear why the exposure point concentration is described here as the concentration “upon which further action is predicated.” EPA defines the exposure point concentration as the average concentration contacted at the exposure points over the duration of the exposure period. It does not represent a level on which to base further action. In addition this approach is contrary to EPA policy on the separation of risk assessment and risk management. Please revise the definition of the exposure point concentration. As noted in our previous comment, a uniform assumption of a lognormal distribution is not appropriate. Use of the Land method to calculate a 95 percent UCL should only be done when the data clearly fit a true lognormal distribution.
26. **Section 7.5.1.2, Toxicity Values for Carcinogens, Pages 7-41 to 7-42:** For completeness, this section should also present a description of the current weight of evidence narrative system (i.e., “known/likely,” “cannot be determined,” and “not likely”) for classifying human carcinogenic potential as described in the Guidelines for Carcinogen Risk Assessment (EPA, 1999). In addition, the statement that “data are not yet sufficient to apply the ‘threshold’ concept in the development of risk assessments for carcinogens” should be clarified or deleted. For certain chemicals (e.g., chloroform), EPA uses a threshold for evaluating potential carcinogenic effects.
27. **Section 7.5.1.3, Availability of Toxicity Values, Page 7-42:** The discussion here regarding the “dose of the toxicant that reaches the target organ” is incorrect and misleading. EPA toxicity criteria for evaluating oral and inhalation exposures are based on an external dose. As such, pharmacokinetic processes that would account for a

differential dose at the site of injury are accounted for by comparing the applied dose to the measured effect. Hence, the information presented in the second paragraph should be deleted, particularly in light of the fact that toxicity values are not presented anywhere in the PRE.

28. **Tables 7-4 to 7-7, Screening PRE Results:** The footnotes to these tables describe the calculation of the 95 percent UCL of the mean for lognormally distributed data, and state that the H-statistic was obtained from EPA, 1992. A review of the cited reference reveals that values of the H-statistic are not provided. Please provide the correct reference.
29. **Tables 7-4 to 7-7, Screening PRE Results:** Soil Screening Levels (SSLs) for the protection of groundwater are not used in the calculation of carcinogenic risk and noncarcinogenic hazard, and their derivation and relevance to the PRE are not described in Section 7. We recommend that the columns relating to the SSLs be deleted from these tables.
30. **Tables 7-4 to 7-7, Screening PRE Results:** Consistent with EPA guidance on risk assessment (EPA, 1989), estimates of noncarcinogenic hazard should be segregated by target organ whenever the total hazard index exceeds 1.
31. **Tables 7-4 to 7-7, Screening PRE Results:** Unless it can be reliably demonstrated that exposure to subsurface soils (defined here as a depth 1-10 feet) can occur exclusive of exposure to surface soils, risk and hazard should be calculated based on exposure to surface soil (0-1 foot, representing undisturbed site conditions) and surface and subsurface soil combined (0-10 feet). Further, in accordance with EPA guidance (EPA, 1989) estimates of risk should be presented to only one significant figure in these tables and the accompanying text. Use of excessive significant figures implies a greater degree of precision than is inherent in the calculation presented here.
32. **Section 7.5.4, Results of the Screening PRE, Page 7-57:** The text in this section states that if the estimated cumulative cancer risk was less than  $1\text{E-}6$ , the hazard index was less than 1, and the exposure point concentration for lead was less than the Region 9 PRG of 400 mg/kg, then no further action was recommended for the site. However, protection of human health is not the sole criterion for determining whether contamination warrants a remedial response. As noted in Section 1, the objectives of the SI report include evaluating impacts to human health and the *environment*. Please revise the text in this section to correctly note that a determination of no threat to human health is not in and of itself sufficient justification for a recommendation of no further action.
33. **Section 7.6.1, Site-Specific PRE, Selection of COPCs, Page 7-59:** As noted elsewhere in this section, the Region 9 PRGs are not descriptive of many of the exposure scenarios considered in the site-specific PRE. Hence, it is not appropriate to use the PRGs as a risk-based screening level for the selection of COPCs for these evaluations. Receptor-specific PRGs should be calculated using the equation presented on page 7-63 (as well as calculating PRGs for noncarcinogenic effects). The resulting values may then be used to calculate risk and hazard estimates for the appropriate receptors.

34. **Section 7.6.2, Receptor Selection and Exposure Factors, Construction/Utility Workers, Page 7-60:** In accordance with EPA guidance (EPA, 2002b), a soil ingestion rate of 330 mg/day should be used for the construction worker rather than 100 mg/day suggested here.
35. **Table 7-8, Exposure Factors for Site-specific PRE:** Provide references for each of the values presented in this table. In addition, the particulate emission factor (PEF) included in the PRG derivations addresses only dust particles arising due to wind, and does not address dust generated via intrusive operations or vehicular traffic. A methodology for developing a PEF for assessing inhalation exposures reflective of a construction or utility worker may be found in the Supplemental Guidance for Developing Soil Screening Levels (EPA, 2002b), and should be used for these receptors.
36. **Section 7.6.3.1, Site Specific PRG Model, Page 7-63:** Of the 19 terms presented in the equation in this section, only two are defined. Please provide an explanation of the remaining terms. In addition, values for each of the terms not provided in Table 7-8 (e.g., cancer slope factors, absorption factor) should be provided in a table included in the SI, as insufficient information is provided to verify the derivation of the receptor-specific PRGs presented in Table 7-13 through 7-14. Also, please ensure that the acronyms used to define each of the terms in this equation are consistent with those presented in Table 7-8.
37. **Section 7.7.1, Uncertainties in Exposure Assessment, Pages 7-83 to 7-84:** This discussion should provide additional information regarding the impacts of judgmental sampling on the exposure assessment. Exposure point concentrations in this PRE have generally been calculated as the 95 percent UCL. One of the underlying assumptions regarding calculation of the UCL is that the samples represent a randomly drawn subset of the population, which is clearly not the case here. In addition, additional information is needed regarding the fact that sampling was limited for certain analytes (i.e., only two samples were analyzed for dioxins).
38. **Tables 7-9 and 7-10, Site-Specific PRE, Residential Scenario:** It is not clear why the residential scenario was reevaluated in the site-specific PRE using only a limited set of contaminants of potential concern. A residential scenario is not described in Section 7.6.2, Receptor Selection and Exposure Pathways for the site-specific PRE, and site-specific exposure values are not presented in Table 7-8 for a residential receptor. A comparison of the information presented in Tables 7-9 and 7-10 with Table 7-4 and 7-5 reveals that the site-specific PRE for residential receptors is simply a reiteration of the screening PRE with a reduced COPC list. Since they provide no additional information, Tables 7-9 and 7-10 should be deleted.
39. **Section 7.8, Risk Management Considerations, Page 7-85:** While consideration of the NCP risk range is an integral part of the remedial decision process, the discussion of the risk management range within the risk assessment itself is inappropriate and inconsistent with EPA policy. Use of the "balancing criteria" is only appropriate at the Feasibility Study phase of the CERCLA process.

40. **Section 7.9, Conclusions and Recommendations, Page 7-86:** This section makes claims regarding the acceptability of the risk posed by contamination at AA 3. As previously noted, the human health risk assessment should present the risk calculations and not include discussion of how the risk could be managed. Such discussion should be reserved for the Feasibility Study. Please remove these references from this section.
41. **Section 8 Ecological Risk Assessment, Page 8-1:** Please note that the conclusion that there is no significant ecological risk is based on current conditions. If a future owner disturbs the contents of the landfill, conditions could change such that potential contaminants in the landfill could become available to the sensitive species in the area.
42. **Section 8.2.7, Toxicity Evaluation, Page 8-24:** The EPA 2003a reference is for IRIS. There does not appear to be a citation for the EPA EcoSSLs. There are a number of instances in the text where this has happened.
43. **Section 8.2.7, Toxicity Evaluation, Page 8-24:** The definition of TRV is incorrect. A Toxicity Reference Value (TRV) is a dose level at which a particular biological effect may occur in an organism, based on laboratory toxicological investigations. The definition in the text refers to a No Observed Adverse Effect Level (NOAEL) which is not the same as a TRV
44. **Section 8.2.7.1, Taxonomic Extrapolation, Page 8-25:** It is not accepted practice to extrapolate from mammals to birds or birds to mammals.
45. **Section 8.2.7.2, Endpoint Extrapolation, Page 8-25:** Please cite a reference for the extrapolation of subchronic to chronic (0.5).
46. **Section 8.3.2.1, Hazard Quotients, Page 8-31:** Surface water should be screened against the Cal Toxics values.
47. **Section 8.4.6.1 Soil, Page 8-48, next to last paragraph:** There appears to be a typo in the units for the dioxins.
48. **Section 9.11, Conclusions and Recommendations, Page 9-13:** The report indicates that, "...no further investigation is warranted and site closure is recommended." The results of the initial investigations were that waste, some of it hazardous (asbestos) and not all of it inert (soil gas containing up to 23 percent methane was collected in the central portion of the site and high concentrations of a solvent, tetrahydrofuran, were detected in a number of soil gas probes), was disposed to land at AA 3 and that risks to human and ecological receptors have resulted from this disposal and that hazardous constituents have degraded groundwater quality downgradient of the landfill. Hence, it is appropriate for this site to continue through the CERCLA process to a record of decision. Because it has been shown that there is risk to human health above 1E-6, it is not appropriate to propose No Further Action at this stage.
49. **Appendix B, Borehole and Well Logs:** For completeness, please include the well logs

for Wells MW01 - MW04.

## Errata

1. **Section 3.5, Exploratory Trenching and Subsurface Soil Sampling, Page 3-5:** Please revise "Subsurface oil sampling" to read "Subsurface soil sampling."
2. **Section 3.5.1, Radiological Screening During Trenching:** This section references Section 3.3.2. There is no Section 3.3.2 in the report. The correct reference is probably Section 3.7. Please correct this discrepancy.
3. **Figure 5-4, Geologic Cross Section B-B', Page 5-9:** "ML" - a code used in the figure - is not included in the Legend. Please add it to the Legend.
4. **Figure 5-11, Soil Property Characterization Data Versus Depth, Page 5-35:** Some of the symbols used in the figure are not defined. Please add the symbols and their definitions to the figure.
5. **Figure 5-12, Soil Property Characterization Data Versus Elevation, Page 5-37:** Some of the symbols used in the figure are not defined. Please add the symbols and their definitions to the figure.
6. **Section 5.5.3.1, Jurisdictional Criteria, Page 5-43:** The reference for the court decision regarding an intrastate waters site in Illinois currently reads: "(Cite Reference)". Please replace this with the actual reference.
7. **Section 5.5.5.3, Habitat, Page 5-46:** This section states that "Most of the site (9.60 acres within AA 3) is 'ruderal' vegetation." Earlier in the document, AA 3 is described as encompassing approximately 9 acres, but according to this section, it is larger than 9.60 acres. Please resolve this inconsistency.
8. **Table 7-1:** Abbreviations for stereochemistry should not be capitalized (e.g., M/P Cresol should be m-/p-cresol). This becomes particularly confusing when using the letter n, as a capital N is used to denote the presence of nitrogen in the molecule. Hence, the compounds N-Nitroso-n-propylamine and di-n-butylphthalate are not the same as N-Nitroso-N-propylamine and di-N-butylphthalate shown in Table 7-1. In addition, benzo(g,h,l)perylene should be corrected to benzo(g,h,i)perylene.
9. **Appendix D:** Please verify the units for the initial and final canister pressures. The values are probably reported in inches of mercury vacuum and not psi.